FMC Corporation
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Philadelphia, PA 19104
USA

215.299.6000
fmc.com

July 18, 2019

Mr. Jeffrey Thomas
Remedial Project Manager
U.S. Environmental Protection Agency
Hazardous Site Cleanup Division, 3HS23
1650 Arch Street
Philadelphia, PA 19103

RE: QUARTERLY PROGRESS REPORT FOR THE AVTEX FIBERS SUPERFUND SITE FOR THE PERIOD APRIL 1 THROUGH JUNE 30, 2019

Dear Mr. Thomas,

This Quarterly progress report addresses the reporting requirements in 1999 Consent Decree between the United States of America and FMC Corporation to conduct removal and remedial actions. In accordance with Section XI, Paragraph 45 of the Consent Decree, FMC has prepared this progress report to describe actions taken pursuant to the Consent Decree during the second quarter of 2019.

If you have any questions or comments, please call me at 215-299-6047.

Sincerely,

Brian McGinnis
Senior Remediation Manager

Enclosure (1)
cc: W. Jordan, B. Kiracofe, VADEQ
H. Philip, Parsons
M. Robinson, Parsons

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1.0 INTRODUCTION

FMC Corporation (FMC) has conducted removal and remedial activities at the Avtex Fibers Superfund Site, Front Royal, Virginia (Site). The removal action, remedial design, and remedial action activities were performed pursuant to the 1999 Consent Decree between the United States of America and FMC Corporation (effective 21 October 1999).

Upon completion of the Groundwater Leachate Treatment Plant in 2014, following Site remediation activities, the Site transitioned into the Operations and Maintenance (O&M) phase. This report documents the O&M and monitoring activities and findings for the reporting period April 1, 2019 through June 30, 2019. Daily operations and maintenance activities are ongoing and meet the requirements in the Site-Wide O&M Plan (FMC, May 2015).

In accordance with Section XI of the Consent Decree, this quarterly progress report contains the following:

- Description of actions taken, and a summary of data generated by FMC during the second quarter (April, May and June 2019);
- Actions scheduled for the next quarter;
- Description of problems and actions taken to mitigate the problems;
- Update on the schedule of actions and percentage completion of tasks;
- Modification to the Work Plans or other schedules; and
- Activities undertaken in support of the Environmental Protection Agency (EPA) Community Relations Plan.

Attachment 1 lists correspondence and deliverables transmitted from FMC or FMC contractors to EPA, and from EPA or EPA contractors to FMC during the second quarter (April, May and June 2019).

2.0 OU-7, OU-10, and NON-TIME CRITICAL REMOVAL AND REMEDIAL ACTIONS

2.1 ACTIONS TAKEN AND REPORTS PREPARED DURING THE REPORTING PERIOD

- Completed quarterly inspection as described in Section 6 of Part 1 of the Site-Wide O&M Plan. The results are presented in **Attachment 2**.
- Completed quarterly monitoring of gas vents as described in Section 3.0 of Part 1 of the Site-Wide O&M Plan and as amended by the February 28, 2018 letter from Jeff Thomas of EPA with the subject “Proposed Modification to the Passive Gas Vent and Gas Vent Filter System Inspection, Monitoring and Maintenance Section of the Site-Wide Post Closure Care Operations and Maintenance Plan (May 2015).”

- Completed quarterly post-closure OU-7 and site perimeter real time air monitoring as required by Section 2.2 of the Air Monitoring Plan Operable Unit 7, Avtex Fibers Superfund Site, Front Royal, Virginia, October 2011. The results are presented in **Attachment 2**.

2.2 DATA GENERATED IN DURING THE REPORTING PERIOD SECOND QUARTER 2019

As required by the Air Monitoring Plan, post construction quarterly air monitoring for hydrogen sulfide and organic vapors was completed in June 2019. The results and a map showing the sample locations is provided in **Attachment 3**. No hydrogen sulfide or volatile organic compounds (VOCs) were detected at any of the monitoring locations. The following instruments were utilized to collect the real-time readings:

- Hydrogen Sulfide: Jerome 613X.
- Organic Vapor: MiniRAE 3000

2.3 ACTIONS TO BE COMPLETED NEXT PERIOD (JULY, AUGUST, AND SEPTEMBER 2019)

- Complete quarterly water level measurements as described in Section 2 of the GMP.
- Complete quarterly inspection as described in Section 6 of Part 1 of the Site-Wide O&M Plan.
- Complete quarterly monitoring of gas vents as described in Section 3.0 of Part 1 of the Site-Wide O&M Plan and as amended by the February 28, 2018 letter from Jeff Thomas of EPA with the subject "Proposed Modification to the Passive Gas Vent and Gas Vent Filter System Inspection, Monitoring and Maintenance Section of the Site-Wide Post Closure Care Operations and Maintenance Plan (May 2015)."
- Complete quarterly post-closure OU-7 and site perimeter real time air monitoring as required by Section 2.2 of the Air Monitoring Plan Operable Unit 7, Avtex Fibers Superfund Site, Front Royal, Virginia, October 2011.
- Complete the annual groundwater gauging and sampling event – July 2019
- Collect annual river surface water and sediment samples – July 2019
- Collect annual sump samples – July 2019
- The annual wetland survey is scheduled for September 2019

2.4 PROBLEMS ENCOUNTERED AND REMEDIES

No problems were encountered during the reporting period.

3.0 GROUNDWATER AND LEACHATE TREATMENT PLANT (GLTP)

3.1 ACTIONS TAKEN AND REPORTS PREPARED SECOND QUARTER 2019

- The GLTP operated and discharged to the South Fork Shenandoah River (River) for 90 days from April 1 to June 30, 2019.

- VSC Fire and Security, Inc. completed the quarterly wet sprinkler test on May 17, 2019. .
- Lift Station Two pump was replaced
- Viscous Basin Nine sump pump was replaced

Discharge Monitoring

Discharge monitoring was completed as required by the July 24, 2014 VADEQ final Fact Sheet and Applicable or Relevant and Appropriate Requirements (ARARs) for the discharge of effluent from the GLTP. Monthly discharge monitoring included: flow, pH, TSS, BOD5, and carbon disulfide. The daily and monthly flow and chemical data are listed in the Discharge Monitoring Reports (DMRs), which were submitted during the second quarter of 2019 and summarized below.

Table 1.0 Summary of 2Q19 Monthly Effluent Sampling

	Permitted Limits	**April 2019 (month avg/daily max)**	**May 2019 (month avg/daily max)**	**June 2019 (month avg/daily max)**
Flow(gpd)	0.396 MGD	0.072 / 0.092	0.073 / 0.088	0.085 / 0.112
pH (S.U. range)	6.5 – 9.0	7.47 – 8.05	7.09 – 7.57	6.99 – 7.41
TSS (mg/L)	40 / 130	<QL / <QL	0.50 / 2.00	<QL / <QL
BOD_5 (mg/L)	24 / 64	<QL / <QL	0.38 / 1.50	<QL / <QL
CS2 (ug/L)	No limit established. 0.1mg/L action level	<QL	<QL	<QL

*Where parameters non-detect, the value '0' was used for calculating average and maximum concentrations.

- Flow: Flow during discharge was monitored continuously. Additionally, flow rates for the lift stations, test wells and viscose basins for the months of April, May, and June 2019 are provided in Table 3.2 (**Attachment 4**).
- pH: pH was monitored continuously during the days that discharge occurred. The pH monitoring results for each month of the reporting period were included with the monthly DMRs. The effluent pH was within the range of 6.5 to 9.0 specified in the ARARs.
- TSS: TSS was monitored weekly. The permitted monthly daily average limit for TSS of 40 mg/L and the permitted monthly maximum daily limit of 130 mg/L for TSS were not exceeded during the reporting period. The May 2019 TSS monthly average and daily maximum concentrations were 0.50 mg/L and 2.00 mg/L.
- BOD_5: BOD_5 was monitored weekly. The permitted monthly daily average limit for BOD_5 of 24 mg/L and the permitted monthly maximum daily limit of 64 mg/L for BOD_5 were not exceeded during the reporting period. The May 2019 BOD_5 monthly average and daily maximum concentrations were 0.38 mg/L and 1.50 mg/L, respectively.
- Carbon Disulfide: Carbon Disulfide was monitored monthly and no limit is established in the ARARs. The results for the monthly samples collected in the second quarter of 2019 were less than the 0.1 mg/L monthly action level specified in the ARARs.

3.2 DATA GENERATED DURING SECOND QUARTER 2019

- The wet weather PCB sampling event was conducted in December of 2018. The validated data were received from the laboratory in March 2018, and subsequently submitted to the Virginia Department of Environmental Quality (VADEQ) in conjunction with the April 2019 DMR. However, the VADEQ did not receive the compact disc containing the laboratory analytical report, location table, and electronic data deliverable. The PCB results were submitted via email and shipped to the VADEQ on July 2, 2019.
- The annual Whole Effluent Toxicity (WET) event was completed in May 2019, and the results (zero percent mortality) are included in the June 2019 DMR.
- The annual GLTP discharge sample was collected in June 2019, and the results will be submitted once the data validation process has been completed.

Discharge monitoring, rainfall data and flow totals for the lift stations, test wells and viscose basin are contained in **Attachment 3**. DMRs were submitted to the VADEQ and EPA by the tenth of each month.

3.3 ACTIONS TO BE TAKEN NEXT PERIOD (JULY, AUGUST, AND SEPTEMBER 2019)

- Continue GLTP operations and maintenance and operate the GLTP biological system in continuous mode.
- Collect GLTP system discharge samples as required per ARARs.
- Submit viscous basins repairs workplan.

3.4 PROBLEMS ENCOUNTERED AND REMEDIES

No problems were encountered during the reporting period.

4.0 OTHER SITE RELATED DOCUMENTS AND ITEMS

4.1 ACTIONS TAKEN AND REPORTS PREPARED SECOND QUARTER 2019

- Quarterly inspections (e.g. seep areas, river berms, gas vents, etc.) and inspection reports completed.

Rainfall Data

Table 3.1 (**Attachment 4**) shows that a total of 9.4 inches of precipitation fell on the Site during the second quarter of 2019 (April, May, and June 2019). The total precipitation for 2019 to-date is 21.3 inches, representing 54% of the average Site total yearly precipitation (39.6 inches).

4.2 ACTIONS TO BE TAKEN NEXT PERIOD

- Quarterly inspections (e.g. seep areas, river berms, gas vents, etc.) and inspection reports to be completed.

ATTACHMENTS

1 Summary of Monthly Correspondence
2 Preliminary Site-Wide Quarterly Inspection (with repairs photo log)
3 OU-7 and Site Perimeter Air Monitoring Results
4 GLTP Discharge Monitoring and Information
   a. Table 3.1 – Monthly Flow Totals Avtex Site Lift Stations, Test Wells and Viscose Basin
   b. Table 3.2 - Site Rainfall Data

ATTACHMENT 1

LIST OF CORRESPONDENCE AND DELIVERABLES FOR THE PERIOD APRIL 1, 2019 TO JUNE 30, 2019, AVTEX FIBERS SUPERFUND SITE, FRONT ROYAL, VIRGINIA

FMC to VADEQ

- April 9, 2019: Submission of Discharge Monitoring Report – March 2019 (submitted to VADEQ and EPA)
- May 9, 2019: Submission of Discharge Monitoring Report – April 2019 (submitted to VADEQ and EPA)
- June 10, 2019: Submission of Discharge Monitoring Report – May 2019 (submitted to VADEQ and EPA)

VADEQ to FMC

- June 18, 2019: Avtex Fibers Site wet PCB sampling event

FMC to EPA

- April 12, 2019: Quarterly Progress Report for the Avtex Fibers Superfund Site for the Period 1 January to 31 March 2019
- May 6, 2019: Reponses to EPA's April 12, 2019, Comments on the Quarterly Progress Reports for the Avtex Fibers Superfund Site for the Periods 1 July to 30 September and 1 October to 31 December 2018, dated December 17, 2018 and February 8, 2019 Respectively, Front Royal, Virginia
- May 6, 2019: Reponses to EPA's April 12, 2019, Comments on the Quarterly Progress Reports for the Avtex Fibers Superfund Site for the Periods 1 July to 30 September and 1 October to 31 December 2018, dated December 17, 2018 and February 8, 2019 Respectively, Front Royal, Virginia
- May 16, 2019: EMAIL FMC Front Royal - Proposed lab changes
- June 6, 2019: EMAIL March 2019 DMR - Avtex Fibers Site, Front Royal, VA (DRAFT basin repair figures)

EPA to FMC

- April 12, 2019: Quarterly Progress Reports for the Avtex Fibers Superfund Site for the Periods 1 July to 30 September and 1 October to 31 December 2018, dated December 17, 2018 and February 8, 2019 Respectively, Front Royal, Virginia.
- May 13, 2019: Revised Quarterly Progress Reports for the Avtex Fibers Superfund Site for the Periods 1 July to 30 September and 1 October to 31 December 2018, dated December 17, 2018 and February 8, 2019 Respectively, Front Royal, Virginia.
- June 6, 2019: March 2019 DMR - Avtex Fibers Site, Front Royal, VA (meeting agenda)

- June 13, 2019: 2016 and 2017 OU7 Post-Closure Stormwater Sampling Report for the Avtex Fibers Superfund Site, Front Royal, Virginia
- June 13, 2019: FMC's May 24, 2019, Submission of the Revised Version of the Institutional Control Implementation and Assurance Plan Avtex Fibers Superfund Site, Front Royal, Virginia.
- June 13, 2019: May 16, 2019 Laboratory Change Proposal for the Avtex Fibers Superfund Site, Front Royal, Virginia

Quarterly Inspection Report

Inpected by: M. Harder / M. Robinson
Report No.: 2019-06
Date: 06-12-2019
Areas Inspected: See Map

1. Remediation/Restoration Areas

Questions	Response		Comments and Recommendations
Is settlement or standing water evident? If Yes, describe the degree of settlement(s) (slight, moderate, significant), record approximate dimensions, and indicate the location(s) on an attached map.	☑ Yes	☐ No	Slight to moderate settlement in small/isolated areas. Standing water present in nine areas (SE of VB-2&3, around wells 103/203/303, two areas on top of VB-9, two areas on top of VB-10, and two areas on top of SB-3) of the site during this inspection.
Is erosion evident? If Yes, describe the type of erosion (rills, gullies), record approximate dimensions (length, width, depth) and indicate location(s) on an attached map.	☐ Yes	☑ No	
Are potential leachate seeps evident or migration of contamination? If Yes, describe the nature (size, color, flow rate), record location on an attached map, and photograph. [Note: Check former seep areas in unnamed tributary north of VB 4-6, check pond area north of VB 9, and check other likely areas (e.g., embankments of VBs, SBs)]	☑ Yes	☐ No	See map for locations. Potential seeps: -SE of VB-2&3 (moist area of former standing water) -NW of VB-7&8 (Dry)
Do landfill/basin embankments show signs of erosion, failure (e.g., cracking, sloughing) or migration of contamination (e.g., seeps, exposed waste)? If Yes, describe the nature (type, size), record location on an attached map, and photograph [Note: Check river-side of embankments along river, if safe to do so.]	☐ Yes	☑ No	
Is vegetation distressed or are bare areas evident? If Yes, describe the type of disorder (distressed, sparsely vegetated, bare), record approximate dimensions and indicate location(s) on an attached map.	☑ Yes	☐ No	Isolated/minor bare areas noted. See map for locations. With few exceptions, vegetation is filling in.

Quarterly Inspection Report

Inpected by: M. Harder / M. Robinson
Report No.: 2019-06
Date: 06-12-2019
Areas Inspected: See Map

Questions	Response		Comments and Recommendations
Is there woody vegetation greater than 2 inches in diameter or 5 feet in height on the cover system(s)? If Yes, describe where and actions to be taken (refer to Section 4.2 of the O&M Plan).	☐ Yes	☑ No	
Is any other damage evident? If Yes, describe the type of damage(s) and indicate the location(s) on an attached map.	☐ Yes	☑ No	
Are obstruction(s) (brush, debris, timber, leaves, sediment) interfering with the proper functioning of ditches, gutters or flumes? If Yes, describe the type(s) of obstruction(s) and indicate the location(s) on an attached map.	☑ Yes	☐ No	Minor obstructions at one location: 1. Sediment building up at end of culvert southeast of VB-10 causing standing water in culvert. Issue to be monitored and added to maintenance list.
Is sediment deposited in diversion berms, ditches gutters, flumes or culverts deeper than ¼ of the original channel depth (shown on the contract drawings) or culvert diameter? If Yes, record approximate dimensions and indicate locations on an attached map.	☐ Yes	☑ No	

Quarterly Inspection Report

Inpected by: M. Harder / M. Robinson
Report No.: 2019-06
Date: 06-12-2019
Areas Inspected: See Map

2. Surface Water Drainage and Erosion Control System

Questions	Response		Comments and Recommendations
Is erosion evident? If Yes, describe the drainage structure inspected (ditch, gutter, flume, culvert, outfall, rip-rap), the type of erosion (rills, gullies, washouts, slope failure), record approximate dimensions (length, width, depth) and indicate location(s) on an attached map.	☑ Yes	☐ No	Minor erosion noted in a few isolated areas. See map for locations. Rills forming across access road to LS-1 (west of VB-4, 5, & 6). Rills have also formed on north bank of the sediment basin between the NLF and VB-2&3. Rills have re-formed across the roadway southwest of VB-10, but area appears to be stable.
Is overall shape, configuration, and alignment of the drainageway as shown on the drawings? If No, describe the type of distortion (damaged, eroded, slope failure), record approximate dimensions and indicate location(s) on an attached map.	☑ Yes	☐ No	
Is erosion evident at drainage outlet aprons? If Yes, record approximate dimensions and indicate location(s) on an attached map.	☐ Yes	☑ No	

Quarterly Inspection Report Photographic Log
Avtex Superfund Site
Front Royal, Virginia

Photo Number: 1

Unit: *OU-10*

Basin/Landfill:

VB-4, 5, & 6

Date : 06/12/2019

Photo Description: 20’ x 40’ area of former standing water adjacent to LS-2 (Dry).

Photo Number: 2

Unit: *OU-10*

Basin/Landfill:

VB-4, 5, & 6

Date : 06/12/2019

Photo Description: 20’ x 40’ area of former standing water adjacent to LS-2 (Dry).

Quarterly Inspection Report Photographic Log
Avtex Superfund Site
Front Royal, Virginia

Photo Number: 3

Unit: *OU-10*

Basin/Landfill:

VB-4, 5, & 6

Date : 06/12/2019

Photo Description: Rills forming on access road to LS-1 west of VB-4, 5, & 6.

Photo Number: 4

Unit: *OU-10*

Basin/Landfill:

VB-4, 5, & 6

Date : 06/12/2019

Photo Description: Former area of standing water at access path to LS-1 west of VB-4, 5, & 6.

Quarterly Inspection Report Photographic Log
Avtex Superfund Site
Front Royal, Virginia

Photo Number: 5

Unit: *OU-10*

Basin/Landfill:

VB-2&3, and NLF

Date : 06/12/2019

Photo Description: Former area of standing water southeast of VB-2&3.

Photo Number: 6

Unit: *OU-10*

Basin/Landfill:

VB-2&3, and NLF

Date : 06/12/2019

Photo Description: Bare soil (~10' x30`) with rills southeast of VB-2&3 (Sediment basin between NLF and VB-2&3). Stable.

Quarterly Inspection Report Photographic Log
Avtex Superfund Site
Front Royal, Virginia

Photo Number: 7

Unit: *OU-7*

Basin/Landfill:

VB-9, 10, & 11

Date : 06/12/2018

Photo Description: Area around wells 103/203/303 drying out since well repairs.

Photo Number: 8

Unit: *OU-7*

Basin/Landfill:

VB-10

Date : 06/12/2019

Photo Description: Sediment building up at end of culvert under access road.

Quarterly Inspection Report Photographic Log
Avtex Superfund Site
Front Royal, Virginia

Photo Number: 9

Unit: *OU-7*

Basin/Landfill:

VB-10

Date : 06/12/2019

Photo Description: Bare patches and spotty vegetation in southeast corner of VB-10. Grass is starting to fill in.

Photo Number: 10

Unit: *OU-7*

Basin/Landfill:

VB-10

Date : 06/12/2019

Photo Description: Bare patches and exposed matting at down chute in south side of VB-10.

Quarterly Inspection Report Photographic Log
Avtex Superfund Site
Front Royal, Virginia

Photo Number: 11

Unit: *OU-7*

Basin/Landfill:

VB-10

Date : 06/12/2019

Photo Description: Bare patches and exposed matting at down chute on south side of VB-10.

Photo Number: 12

Unit: *OU-7*

Basin/Landfill:

VB-10

Date : 06/12/2019

Photo Description: Bare soil in southwest corner of VB-10. Grass beginning to fill in.

Quarterly Inspection Report Photographic Log
Avtex Superfund Site
Front Royal, Virginia

Photo Number: 13

Unit: *OU-7*

Basin/Landfill:

VB-10

Date : 06/12/2019

Photo Description: Rills forming across roadway in southwest corner of VB-10 (stable).

Photo Number: 14

Unit: *OU-7*

Basin/Landfill:

VB-10

Date : 06/12/2019

Photo Description: Standing water in southeast section of VB-10 (30’ x 30’).

Quarterly Inspection Report Photographic Log
Avtex Superfund Site
Front Royal, Virginia

Photo Number: 15

Unit: *OU-7*

Basin/Landfill:

VB-10

Date : 06/12/2019

Photo Description: Standing water in southwest section of VB-10 (30’ x 30’).

Photo Number: 16

Unit: *OU-7*

Basin/Landfill:

VB-9

Date : 06/12/2019

Photo Description: Standing water and additional settlement observed to previously repaired areas of settlement on VB-9 (30’ x 40 each).

Quarterly Inspection Report Photographic Log
Avtex Superfund Site
Front Royal, Virginia

Photo Number: 17

Unit: *NTCRA Basins*

Basin/Landfill:

SB-1

Date : 06/12/2019

Photo Description: Standing water (20'x40') in front of northernmost inlet between SB-3 and SB-2.

Photo Number: 18

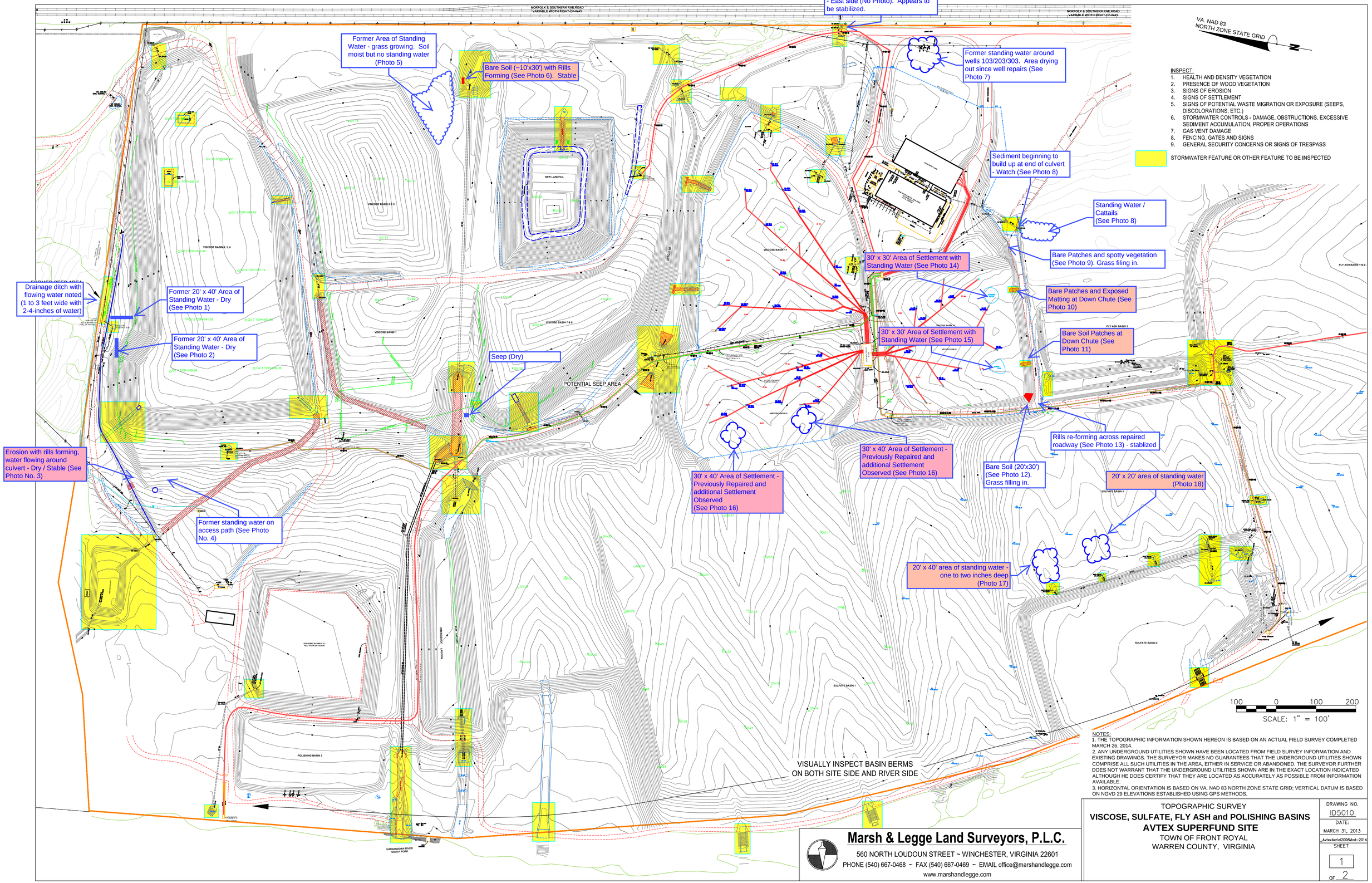
Unit: *NTCRA Basins*

Basin/Landfill:

SB-1

Date : 06/12/2019

Photo Description: Standing water (20'x20') in front of the second to northernmost inlet between SB-3 and SB-2.



NOTES:
1. THE TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON AN ACTUAL FIELD SURVEY COMPLETED MARCH 26, 2014.
2. ANY UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE.
3. HORIZONTAL ORIENTATION IS BASED ON VA. NAD 83 NORTH ZONE STATE GRID; VERTICAL DATUM IS BASED ON NGVD 29 ELEVATIONS ESTABLISHED USING GPS METHODS.

Marsh & Legge Land Surveyors, P.L.C.
560 NORTH LOUDOUN STREET ~ WINCHESTER, VIRGINIA 22601
PHONE (540) 667-0468 ~ FAX (540) 667-0469 ~ EMAIL office@marshandlegge.com
www.marshandlegge.com

TOPOGRAPHIC SURVEY
VISCOSE, SULFATE, FLY ASH and POLISHING BASINS
AVTEX SUPERFUND SITE
TOWN OF FRONT ROYAL
WARREN COUNTY, VIRGINIA

DRAWING NO. ID5010
DATE: MARCH 31, 2013
_AvtexAerial2008Mod--2014
SHEET 1 OF 2

VA. NAD 83
NORTH ZONE STATE GRID

N

NORFOLK & SOUTHERN RAILROAD
VARIABLE WIDTH RIGHT-OF-WAY

FLY ASH BASIN 6

FLY ASH BASIN 1 & 2

FLY ASH BASIN 3

SULFATE BASIN 5

SULFATE BASIN 4

SULFATE BASIN 3

SULFATE BASIN 2

SHENANDOAH RIVER

SHENANDOAH RIVER

See Sheet 1 of 2

VISUALLY INSPECT BASIN BERMS
ON BOTH SITE SIDE AND RIVER SIDE

INSPECT:
1. HEALTH AND DENSITY VEGETATION
2. PRESENCE OF WOOD VEGETATION
3. SIGNS OF EROSION
4. SIGNS OF SETTLEMENT
5. SIGNS OF POTENTIAL WASTE MIGRATION OR EXPOSURE (SEEPS, DISCOLORATIONS, ETC.)
6. STORMWATER CONTROLS - DAMAGE, OBSTRUCTIONS, EXCESSIVE SEDIMENT ACCUMULATION, PROPER OPERATIONS
7. GAS VENT DAMAGE
8. FENCING, GATES AND SIGNS
9. GENERAL SECURITY CONCERNS OR SIGNS OF TRESPASS

STORMWATER FEATURE OR OTHER FEATURE TO BE INSPECTED

100 0 100 200
SCALE: 1" = 100'

Marsh & Legge Land Surveyors, P.L.C.
560 NORTH LOUDOUN STREET ~ WINCHESTER, VIRGINIA 22601
PHONE (540) 667-0468 ~ FAX (540) 667-0469 ~ EMAIL office@marshandlegge.com
www.marshandlegge.com

TOPOGRAPHIC SURVEY
VISCOSE, SULFATE, FLY ASH and POLISHING BASINS
AVTEX SUPERFUND SITE
TOWN OF FRONT ROYAL
WARREN COUNTY, VIRGINIA

DRAWING NO.
ID5010
DATE:
MARCH 13, 2014
...Avtex\Aerial\2008Mod~2014
SHEET
2
OF 2

Air Monitoring Form
Avtex Superfund Site
Front Royal, Virginia

Date 6/11/2019
Technician M. Harder

Air Samples Collected?
☐ Yes
☑ No

Gas Monitoring Devices	Used (Y/N)	Calibrated (Y/N)	Date Calibrated	Initials
Jerome613X (low-level H_2S)	Y	Y	2/1/2019	MGR
MiniRae 3000 (PID)	Y	Y	6/11/2019	MH
MultiRae (PID, O2, CO, H2S, LEL)	N	N		
Landtec GEM 5000	N	N		

Weather Conditions:

Precipitation (Current): ☐ Rain ☐ Snow ☐ Sleet ☐ Mix ☐ Other ☑ None
☐ Light ☐ Moderate ☐ Heavy

Current Temperature: 76 °F
Wind Direction (blowing from): NNW (N, NE, SW, variable, etc.)
Wind Speed: 10 mph
Barometric Pressure: 29.88 inches
Cloud Cover: ☑ Clear ☐ Partly Cloudy ☐ Mostly Cloudy ☐ Cloudy/Overcast ☐ Foggy

Monitoring Location	Time	H_2S (ppm)	Oganic / VOC (ppm)	CS_2 (ppm)	Methane (%LEL)	Comments
OU-7 Perimeter - (H_2S Indicator Value = 0.006 ppm)						
N	1530	0.000	0.0	--	--	
NE	1525	0.000	0.0	--	--	
SE	1550	0.000	0.0	--	--	
S	1545	0.000	0.0	--	--	
SW	1540	0.000	0.0	--	--	
NW	1535	0.000	0.0	--	--	
Site Perimeter - (H2S Indicator Value = 0.0014 ppm)						
N	1435	0.000	0.0	--	--	
NE	1400	0.000	0.0	--	--	
E	1405	0.000	0.0	--	--	
SE	1410	0.000	0.0	--	--	
S	1415	0.000	0.0	--	--	
SW	1420	0.000	0.0	--	--	
W	1425	0.000	0.0	--	--	
NW	1430	0.000	0.0	--	--	
Downwind (location: NA)	1445	0.000	0.0	--	--	

Activities Occuring on-site that might relate to air emissions:
Groundwater extraction and treatment.

If monitoring results are greater than one or more of above levels & sustained for 1 minute or longer, take following actions:
1. Notify FMC Site Manager, SSO, and EPA/EPA oversight representative; 2. Stop on-site intrusive operations and assess source(s);
3. Step-up work-zone & perimeter monitoring; 4. Perform monitoring the next day to verify levels.
If H2S > 0.1 ppm sustained for 5 minutes at Site Perimeter - Notify Warren County/Front Royal LEPC and Health Department.

FIGURE 1
AIR MONITORING LOCATIONS DURING OU-7 WORK
AVTEX FIBERS SUPERFUND SITE
FRONT ROYAL, VIRGINIA

N

E
NE
SE
S
SW
W
NW
N

NE
SE
S
N
SW
NW

DOWNWIND LOCATION (JUN 2019)

VB-1
VB-2
VB-3
VB-4
VB-5
VB-6
VB-7
VB-8
VB-9
VB-11
NEW LANDFILL

LEGEND

PROPERTY BOUNDARY

SITE PERIMETER LOCATION

OU-7 PERIMETER LOCATION

NOTE: DOWNWIND LOCATION TO BE DETERMINED BASED ON FIELD CONDITIONS.

500 250 0 500

SCALE IN FEET

G:\CAD\Drawings\FMC_Avtex Front Royal\0122736\A207.dwg

MLB/4-6-11

ERM, INC.

Table 3.2

Site Rainfall Data Avtex Fibers Superfund Site 1 April - June 30, 2019

Month	Average Rainfall for Winchester, VA (in)*	Average Site Rainfall 1990-2013 (in)	2006 Actual Rainfall (in)	2007 Actual Rainfall (in)	2008 Actual Rainfall (in)	2009 Actual Rainfall (in)	2010 Actual Rainfall (in)	2011 Actual Rainfall (in)	2012 Actual Rainfall (in)	2013 Actual Rainfall (in)	2014 Actual Rainfall (in)	2015 Actual Rainfall (in)	2016 Actual Rainfall (in)	2017 Actual Rainfall (in)	2018 Actual Rainfall (in)	2019 Actual Rainfall (in)	Percent of Average Site Rainfall (%)
January	2.4	2.7	2.0	1.2	1.0	1.4	3.35	0.9	2.0	3.8	1.1	1.4	1.2	2.5	1.8	3.9	146%
February	2.5	2.3	1.7	1.9	2.3	0.0	4.35	1.4	2.3	0.9	3.2	0.7	2.2	0.8	2.0	3.4	149%
March	3.1	3.6	0.1	3.7	2.9	1.5	5.7	4.6	1.9	3.9	2.3	1.7	1.0	2.4	0.8	4.6	126%
April	3.1	3.2	2.8	3.4	6.2	3.2	1.59	6.5	2.5	1.3	1.5	2.9	1.3	1.7	2.4	2.8	88%
May	3.7	3.8	1.0	1.9	5.2	5.8	3.25	5.6	3.6	2.4	7.2	1.6	3.9	7.0	7.7	5.1	133%
June	3.9	4.4	9.7	3.5	4.3	4.6	0.6	4.0	3.6	5.2	1.5	3.9	3.8	1.3	9.9	1.6	35%
July	3.9	3.4	2.2	1.7	3.8	3.0	1.8	3.1	4.3	1.9	4.6	1.8	5.4	6.7	6.1		0%
August	3.5	3.1	1.3	2.8	3.5	2.1	3.3	3.4	5.2	2.6	3.7	1.0	2.3	2.1	4.1		0%
September	3.1	4.7	6.1	2.0	4.3	1.3	5.7	5.5	4.9	2.5	1.6	3.6	6.1	1.3	5.9		0%
October	3.2	3.0	4.3	4.1	1.2	2.7	0.65	3.9	4.3	5.1	5.17	1.65	0.6	3.5	1.3		0%
November	3.1	2.9	5.2	1.6	2.5	3.7	1.8	3.0	1.1	1.6	1.83	1.36	0.8	0.9	4.7		0%
December	2.5	2.6	0.7	2.8	1.4	5.0	2.0	3.6	1.55	1.5	3.02	2.46	1.5	0.4	3.7		0%
Totals to Date	**37.9**	**39.6**	**36.9**	**30.4**	**38.5**	**34.2**	**34.1**	**45.2**	**37.0**	**32.8**	**36.7**	**24.1**	**30.0**	**30.4**	**50.3**	**21.3**	**54%**

* Source: National Climate Data Center TD 9641 Clim 81

Table 3.1 Monthly Flow Totals
Avtex Site Lift Stations, Test Wells and Viscose Basin

April 2019										
Lift Stations Flow Report			**Test Wells Flow Report**					**Viscose Basin Flow Report**		
Date	**Total LS Flow (MGD)**		**Date**	**TW1 Flow (MGD)**	**TW2 Flow (MGD)**	**TW3 Flow (MGD)**		**Date**	**VB9 Flow (MGD)**	**VB10 Flow (MGD)**	**VB 11 Flow (MGD)**
4/1/2019	0.007		4/1/2019	0.066	0.023	0.000		4/1/2019	0.000	0.003	0.017
4/2/2019	0.010		4/2/2019	0.066	0.016	0.000		4/2/2019	0.000	0.003	0.018
4/3/2019	0.011		4/3/2019	0.066	0.019	0.000		4/3/2019	0.000	0.002	0.018
4/4/2019	0.003		4/4/2019	0.066	0.009	0.000		4/4/2019	0.000	0.000	0.018
4/5/2019	0.000		4/5/2019	0.066	0.020	0.000		4/5/2019	0.000	0.002	0.018
4/6/2019	0.000		4/6/2019	0.066	0.022	0.000		4/6/2019	0.000	0.002	0.018
4/7/2019	0.000		4/7/2019	0.066	0.022	0.000		4/7/2019	0.000	0.000	0.018
4/8/2019	0.018		4/8/2019	0.060	0.022	0.000		4/8/2019	0.000	0.002	0.018
4/9/2019	0.019		4/9/2019	0.047	0.022	0.000		4/9/2019	0.000	0.002	0.018
4/10/2019	0.015		4/10/2019	0.059	0.022	0.000		4/10/2019	0.000	0.002	0.018
4/11/2019	0.005		4/11/2019	0.065	0.022	0.000		4/11/2019	0.000	0.002	0.018
4/12/2019	0.001		4/12/2019	0.065	0.015	0.000		4/12/2019	0.000	0.003	0.018
4/13/2019	0.000		4/13/2019	0.059	0.004	0.000		4/13/2019	0.000	0.003	0.018
4/14/2019	0.000		4/14/2019	0.065	0.000	0.000		4/14/2019	0.000	0.000	0.018
4/15/2019	0.025		4/15/2019	0.065	0.000	0.000		4/15/2019	0.000	0.002	0.018
4/16/2019	0.025		4/16/2019	0.065	0.000	0.000		4/16/2019	0.000	0.002	0.018
4/17/2019	0.020		4/17/2019	0.046	0.017	0.000		4/17/2019	0.000	0.003	0.019
4/18/2019	0.021		4/18/2019	0.059	0.020	0.000		4/18/2019	0.000	0.003	0.019
4/19/2019	0.015		4/19/2019	0.066	0.023	0.000		4/19/2019	0.000	0.002	0.019
4/20/2019	0.012		4/20/2019	0.066	0.012	0.000		4/20/2019	0.000	0.002	0.019
4/21/2019	0.017		4/21/2019	0.066	0.000	0.000		4/21/2019	0.000	0.000	0.019
4/22/2019	0.017		4/22/2019	0.066	0.000	0.000		4/22/2019	0.000	0.002	0.019
4/23/2019	0.002		4/23/2019	0.059	0.000	0.000		4/23/2019	0.000	0.003	0.019
4/24/2019	0.018		4/24/2019	0.066	0.000	0.000		4/24/2019	0.000	0.003	0.019
4/25/2019	0.018		4/25/2019	0.066	0.000	0.000		4/25/2019	0.000	0.003	0.019
4/26/2019	0.010		4/26/2019	0.066	0.000	0.000		4/26/2019	0.000	0.002	0.019
4/27/2019	0.008		4/27/2019	0.066	0.000	0.000		4/27/2019	0.000	0.002	0.019
4/28/2019	0.008		4/28/2019	0.066	0.000	0.000		4/28/2019	0.000	0.000	0.019
4/29/2019	0.008		4/29/2019	0.066	0.000	0.000		4/29/2019	0.000	0.003	0.019
4/30/2019	0.008		4/30/2019	0.066	0.000	0.000		4/30/2019	0.000	0.003	0.019

Table 3.1 Monthly Flow Totals
Avtex Site Lift Stations, Test Wells and Viscose Basin

May 2019										
Lift Stations Flow Report			Test Wells Flow Report					Viscose Basin Flow Report			
Date	Total LS Flow (MGD)		Date	TW1 Flow (MGD)	TW2 Flow (MGD)	TW3 Flow (MGD)		Date	VB9 Flow (MGD)	VB10 Flow (MGD)	VB 11 Flow (MGD)
5/1/2019	0.011		5/1/2019	0.066	0.000	0.000		5/1/2019	0.000	0.003	0.019
5/2/2019	0.011		5/2/2019	0.066	0.002	0.000		5/2/2019	0.000	0.003	0.019
5/3/2019	0.010		5/3/2019	0.066	0.016	0.000		5/3/2019	0.000	0.003	0.019
5/4/2019	0.010		5/4/2019	0.066	0.020	0.000		5/4/2019	0.000	0.003	0.019
5/5/2019	0.013		5/5/2019	0.066	0.022	0.000		5/5/2019	0.000	0.000	0.019
5/6/2019	0.013		5/6/2019	0.065	0.022	0.000		5/6/2019	0.000	0.000	0.019
5/7/2019	0.021		5/7/2019	0.013	0.012	0.000		5/7/2019	0.000	0.000	0.019
5/8/2019	0.028		5/8/2019	0.024	0.020	0.000		5/8/2019	0.000	0.000	0.019
5/9/2019	0.029		5/9/2019	0.059	0.023	0.000		5/9/2019	0.000	0.003	0.019
5/10/2019	0.020		5/10/2019	0.066	0.022	0.000		5/10/2019	0.000	0.003	0.019
5/11/2019	0.011		5/11/2019	0.066	0.011	0.000		5/11/2019	0.000	0.003	0.019
5/12/2019	0.006		5/12/2019	0.066	0.000	0.000		5/12/2019	0.000	0.000	0.019
5/13/2019	0.026		5/13/2019	0.066	0.016	0.000		5/13/2019	0.000	0.003	0.019
5/14/2019	0.033		5/14/2019	0.066	0.020	0.000		5/14/2019	0.000	0.003	0.019
5/15/2019	0.033		5/15/2019	0.065	0.022	0.000		5/15/2019	0.000	0.003	0.019
5/16/2019	0.009		5/16/2019	0.066	0.004	0.000		5/16/2019	0.000	0.002	0.019
5/17/2019	0.008		5/17/2019	0.066	0.009	0.000		5/17/2019	0.000	0.003	0.019
5/18/2019	0.003		5/18/2019	0.066	0.020	0.000		5/18/2019	0.000	0.003	0.019
5/19/2019	0.000		5/19/2019	0.065	0.022	0.000		5/19/2019	0.000	0.000	0.019
5/20/2019	0.010		5/20/2019	0.065	0.022	0.000		5/20/2019	0.000	0.000	0.019
5/21/2019	0.021		5/21/2019	0.013	0.020	0.000		5/21/2019	0.000	0.002	0.019
5/22/2019	0.021		5/22/2019	0.045	0.022	0.000		5/22/2019	0.000	0.002	0.020
5/23/2019	0.015		5/23/2019	0.059	0.022	0.000		5/23/2019	0.000	0.002	0.020
5/24/2019	0.005		5/24/2019	0.066	0.004	0.000		5/24/2019	0.000	0.002	0.020
5/25/2019	0.000		5/25/2019	0.066	0.000	0.000		5/25/2019	0.000	0.001	0.020
5/26/2019	0.000		5/26/2019	0.066	0.000	0.000		5/26/2019	0.000	0.000	0.020
5/27/2019	0.000		5/27/2019	0.066	0.000	0.000		5/27/2019	0.000	0.000	0.020
5/28/2019	0.018		5/28/2019	0.066	0.000	0.000		5/28/2019	0.000	0.003	0.020
5/29/2019	0.018		5/29/2019	0.066	0.009	0.000		5/29/2019	0.000	0.003	0.020
5/30/2019	0.017		5/30/2019	0.066	0.020	0.000		5/30/2019	0.000	0.003	0.020
5/31/2019	0.009		5/31/2019	0.065	0.022	0.000		5/31/2019	0.000	0.002	0.020

Table 3.1 Monthly Flow Totals
Avtex Site Lift Stations, Test Wells and Viscose Basin

June 2019										
Lift Stations Flow Report			**Test Wells Flow Report**					**Viscose Basin Flow Report**		
Date	**Total LS Flow (MGD)**		**Date**	**TW1 Flow (MGD)**	**TW2 Flow (MGD)**	**TW3 Flow (MGD)**		**Date**	**VB9 Flow (MGD)**	**VB10 Flow (MGD)**	**VB 11 Flow (MGD)**
6/1/2019	0.002		6/1/2019	0.066	0.005	0.000		6/1/2019	0.000	0.002	0.020
6/2/2019	0.000		6/2/2019	0.066	0.000	0.000		6/2/2019	0.000	0.000	0.020
6/3/2019	0.015		6/3/2019	0.066	0.011	0.000		6/3/2019	0.000	0.002	0.020
6/4/2019	0.015		6/4/2019	0.066	0.013	0.000		6/4/2019	0.001	0.002	0.020
6/5/2019	0.008		6/5/2019	0.066	0.012	0.000		6/5/2019	0.001	0.003	0.020
6/6/2019	0.010		6/6/2019	0.066	0.016	0.000		6/6/2019	0.001	0.003	0.020
6/7/2019	0.010		6/7/2019	0.065	0.018	0.000		6/7/2019	0.001	0.003	0.020
6/8/2019	0.003		6/8/2019	0.065	0.004	0.000		6/8/2019	0.001	0.002	0.020
6/9/2019	0.000		6/9/2019	0.066	0.000	0.000		6/9/2019	0.000	0.000	0.020
6/10/2019	0.000		6/10/2019	0.065	0.000	0.000		6/10/2019	0.000	0.000	0.020
6/11/2019	0.012		6/11/2019	0.065	0.000	0.000		6/11/2019	0.000	0.000	0.020
6/12/2019	0.012		6/12/2019	0.066	0.016	0.000		6/12/2019	0.001	0.003	0.020
6/13/2019	0.011		6/13/2019	0.066	0.020	0.000		6/13/2019	0.001	0.003	0.020
6/14/2019	0.004		6/14/2019	0.065	0.022	0.000		6/14/2019	0.002	0.003	0.020
6/15/2019	0.001		6/15/2019	0.066	0.004	0.000		6/15/2019	0.002	0.003	0.020
6/16/2019	0.000		6/16/2019	0.066	0.000	0.000		6/16/2019	0.000	0.000	0.020
6/17/2019	0.010		6/17/2019	0.066	0.016	0.000		6/17/2019	0.000	0.000	0.020
6/18/2019	0.011		6/18/2019	0.066	0.020	0.000		6/18/2019	0.002	0.002	0.020
6/19/2019	0.007		6/19/2019	0.065	0.022	0.000		6/19/2019	0.002	0.002	0.020
6/20/2019	0.001		6/20/2019	0.065	0.022	0.000		6/20/2019	0.002	0.003	0.020
6/21/2019	0.009		6/21/2019	0.065	0.016	0.000		6/21/2019	0.002	0.003	0.020
6/22/2019	0.009		6/22/2019	0.065	0.019	0.000		6/22/2019	0.000	0.000	0.020
6/23/2019	0.003		6/23/2019	0.065	0.022	0.000		6/23/2019	0.000	0.000	0.020
6/24/2019	0.003		6/24/2019	0.065	0.022	0.000		6/24/2019	0.000	0.000	0.020
6/25/2019	0.005		6/25/2019	0.065	0.016	0.000		6/25/2019	0.002	0.003	0.020
6/26/2019	0.005		6/26/2019	0.065	0.019	0.000		6/26/2019	0.002	0.003	0.020
6/27/2019	0.004		6/27/2019	0.065	0.021	0.000		6/27/2019	0.002	0.003	0.020
6/28/2019	0.004		6/28/2019	0.065	0.021	0.000		6/28/2019	0.001	0.002	0.020
6/29/2019	0.003		6/29/2019	0.065	0.021	0.000		6/29/2019	0.000	0.000	0.020
6/30/2019	0.002		6/30/2019	0.065	0.021	0.000		6/30/2019	0.000	0.000	0.020